VIEWPOINT

Neglecting Major Health Problems and Broadcasting Minor, Uncertain Issues in Lifestyle Science

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Author Audio Interview

Supplemental content

Proper communication of scientific messages to the general public and by the media is both an opportunity and a challenge.[1] Accurate communication acquires even more relevance for public health issues and lifestyle choices. If the disseminated messages pertain to major problems with large burden of disease, such as obesity or hypertension, and the messages are true, the benefit can be substantial. Conversely, confusion arises when minor and uncertain issues occupy more attention than the key problems and higher certainty solutions. Lack of proportionality may blur what is essential and what is known.

Altmetric captures the attention that each published scientific article receives in news and social media and provides a composite score thereof. Each year, Altmetric generates a list of the top 100 articles with the highest scores.[2] The Altmetric score to get into the top 100 has increased from 746 points in 2014 to 2001 points in 2018, likely reflecting various issues. Forty nine of the top 100 articles across science that have drawn the greatest attention in 2017 and 2018 (N = 200) pertained to lifestyle issues (the 49 articles with the highest Altmetric scores are summarized in the eAppendix in the Supplement). This prominent placement of lifestyle choices in public discourse is justified. Most scientific investigation, no matter how sophisticated and carefully conducted, has no immediate day-to-day implications, while lifestyle behaviors do. However, high-level dissemination in media is disproportional to what the major problems are within the sphere of lifestyle factors.

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Specifically, smoking is a major modifiable factor, with an estimated 1 billion deaths expected due to tobacco use in the 21st century.[3] However, none of the 49 articles that received the highest news and social media coverage in 2017 and 2018 focused specifically on tobacco. Most articles with top 100 Altmetric scores were related to nutrition, diet, or obesity (29 of 49, 59%). Obesity is also a leading global problem, but only 3 of these 29 Altmetric top 100 articles were directly about obesity; the other 26 articles addressed specific nutrients, foods, supplements, or popular diet patterns. Only 2 of these 29 articles reported null findings. Typically, the articles that attracted most attention dealt with factors that might confer risks of very small magnitude, if any. For example, 3 widely disseminated articles were about coffee and prolonged life expectancy. Even when risk factors with large risks were assessed, for example, alcohol (5 of 49 articles), emphasis was usually placed not on the huge, unequivocal risks of alcoholism, but on the debatable risks of low alcohol intake.

In these 49 Altmetric top 100 articles, tobacco or obesity were underrepresented and dietary choices were overrepresented, whereas exercise appeared more evenly covered. Exercise is also an important lifestyle choice that has major consequences, and appropriately 11 of 49 articles referred to exercise-related themes. A few remaining articles addressed various other topics (sleep, dog ownership, living close to high traffic, smartphone use, social media use, pubic hair grooming, and stress).

Effective dissemination of public health messages may need to focus on a few, powerful, easily understood, uncontentious pieces of advice. For example, uncontested, major recommendations include the following: do not smoke (or quit smoking), exercise regularly, do not eat too much, do not become obese, do not drink alcohol in excess, and sleep well. Conversely, the current informational cloud quickly becomes overpopulated with confusing minutiae. With limited mention of the major causes of death, the average person is bombarded with conflicting trivial messages about purported benefits of various nutrients, is prodded to improve health by owning dogs, or is stressed about modern smartphones and social media exposure. Even in countries with the best public health infrastructure (such as Switzerland), many people know only a small portion of the most essential facts about health. Given this rampant global health risk innumeracy, communicating secondary issues may be largely a fruitless detracting nuisance.

Much of the broadcasted information is not only disproportional, but also uncertain or even false. For example, sometimes mega-Altmetric articles on the same topic reach opposite conclusions, for example, on the relative merits of fat and carbohydrates in diet. Subjective interpretation often carries more weight than the tiny relative risk estimates. Many journals and media cherish the visibility (or notoriety) of endlessly debated material. However, endless debating may damage the perception of public health for the many people and likely reduces trust in science. Public policy is seen as mostly a business of strong opinions, lobbying, and Twitter and Facebook quarrels.

Many widely reverberated articles touch on themes for which strong advocacy abounds among the public, among conflicted industry, and even among scientists

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who lack financial conflicts of interest but espouse strong beliefs. Advocacy may even lead to bullying of dissenters, for example, outraged nutritional scientists recently asked a journal to withhold publication of an extensively peer-reviewed and accepted set of articles on health effects of red and processed meat consumption.[4] The summary guideline article was so fiercely debated that it reached an Altmetric score of 3480 within 7 days of publication. In another occasion, collection of signatures in a petition was orchestrated to request retraction of a dissenter's article.[5] Some expert advocates in these fields have a large number of followers in social media that broadcast their beliefs and attack opponents as being unethical, conflicted individuals. Perhaps this behavior is based on good intentions (eg, to save lives), but heated advocacy is unsuitable for thoughtful, disinterested scientific exchange. It seems more akin to religious dedication to intolerant sects.

Most of the 49 articles with the highest Altmetric scores pertained to observational, nonrandomized studies or reviews or expert consensus based largely on such evidence. Paradoxically, observational studies attract more extreme news coverage than rigorously conducted randomized trials that have null results.[6] Is impartiality possible for research performed within charged environments, where even leading scientists may lobby to silence dissenters or block publication of opposing views? When these scientists act as investigators in the hundreds of observational studies that they publish, or as editors and peer reviewers in evaluating submissions from others, would they tolerate publishing analyses and funding proposals that might contradict their belief system?

It may be impossible to agree on how many widely touted studies reach false results and conclusions. Opinions get entrenched, regardless of what evidence is presented. Furthermore, very small effects can almost never be excluded. Nevertheless, justifiable skepticism can be maintained whether life expectancy is extended by coffee, low-carb diets, low-fat diets, or owning a dog. How likely is it that dementia is caused by living close to heavy traffic and is reduced by eating leafy green vegetables? Even for associations for which causal effects are more believable, most are so small that probably they do not deserve to attract major public attention.

While the public is fed with questionable science on weak or null effects and questionable evidence is exponentially propagated, industries with calculated financial motives and non–science-based groups with harmful agendas deliberately communicate their messages in these same venues. For example, even though no scientific study focusing specifically on the harms of tobacco was among the 49 articles with the highest Altmetric scores, the tobacco industry makes inroads into both news and social media.[7] It supports and orchestrates favorable coverage for its supposedly "reformed" mission with highly misleading messages on new products.[8] While major disagreements about nutrition are expressed among public health experts for marginal issues that might be intrinsically impossible to settle with any certainty, social media spread misinformation from deniers of vaccination or climate change. False news reports are more easily propagated than true reports.[9]

To maximize benefits in public health action, scientists and others need to carefully select the targets. These targets should be major issues for which well-meaning, informed people will have sufficient certainty to be united in their recommendations. Trying to propel long laundry list agendas with uncertain, contentious items may cause confusion and be ineffective. The responsibility for disseminating balanced, true, science-based information is shared by editors and authors of scientific articles, institutions and journals who prepare press releases,[10] and media eager to offer coverage. Observational studies touting small effects despite high risk of confounding and selection biases should rarely be published by general medical journals. These reports should be placed in specialist journals with proper acknowledgment of their limitations in the Abstract. Absolute differences, and not relative differences, should be the primary approach to communication. Regardless of where they get published, these articles should not be accompanied by press releases. News media should substantially reduce coverage of such studies; doing so will help strengthen their reputation for seriousness.

Both scientific journals and media should strategically prioritize for public broadcasting topics and interventions that address major burden of disease and higher certainty knowledge. Media should also abstain from publishing information from or about industries or other groups with known, major negative effects on health. For example, tobacco industry spokespersons who fail to acknowledge the harms of tobacco products should be banned from media (except when media expose or question their honesty). Disclosure of conflicts of interest for authors and interviewees should be widely used not only by scientific journals, but also by public media when major health issues are involved.

ARTICLE INFORMATION

Published Online: October 18, 2019. doi:10.1001/jama.2019.17576

Conflict of Interest Disclosures: None reported.

Funding/Support: METRICS is funded by a grant from the Laura and John Arnold Foundation; the work of John Ioannidis is supported by an unrestricted gift from Sue and Bob O'Donnell.

Role of the Funder/Sponsor: The funder had no role in the preparation, review, or approval of the manuscript and decision to submit the manuscript for publication.

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